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(54) **METHOD FOR CONNECTING LOCAL COMMUNICATION AND ELECTRONIC DEVICE SUPPORTING THE SAME**

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4/008 (2013.01); **H04L 63/0876** (2013.01)

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See application file for complete search history.

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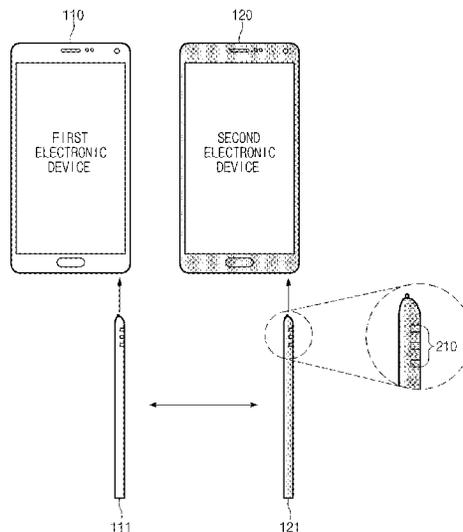
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Primary Examiner — David Bilodeau

(57) **ABSTRACT**

A communication method performed at an electronic device includes receiving first identification information through an auxiliary device which is connectable with the electronic device, comparing the received first identification information with second identification information stored in the electronic device, and connecting with an external electronic device through local communication based on at least one of the first identification information or the second identification information, if the first identification information and the second identification information are different from each other. An electronic device includes a processor configured to control the display, the memory, or the communication module, and connect with an external electronic device through local communication based on at least one of first identification information received through the auxiliary device or second identification information stored in the memory.

19 Claims, 12 Drawing Sheets



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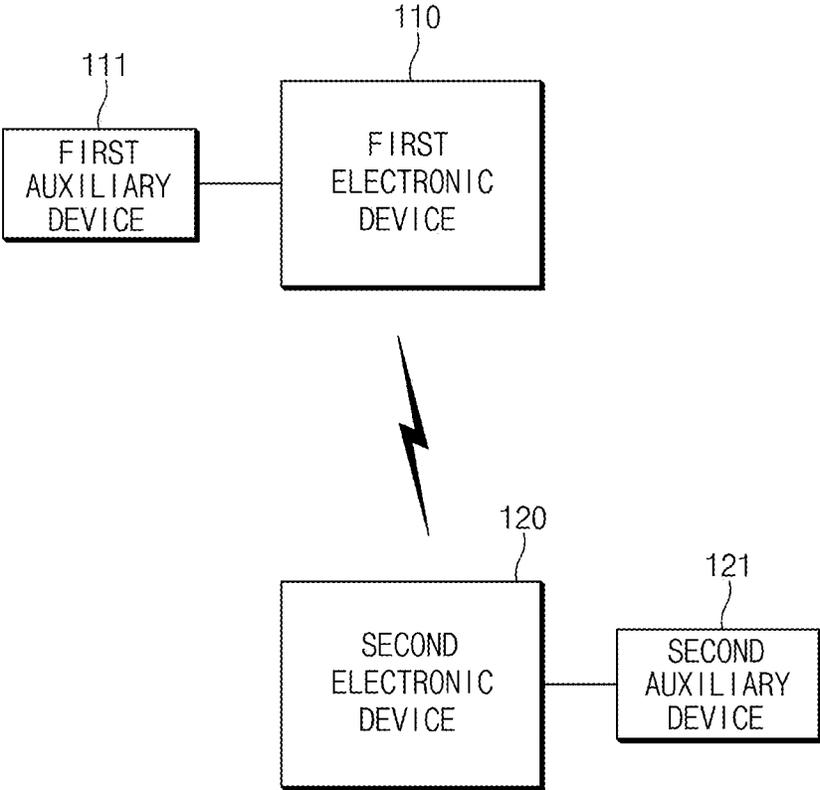


FIG. 1

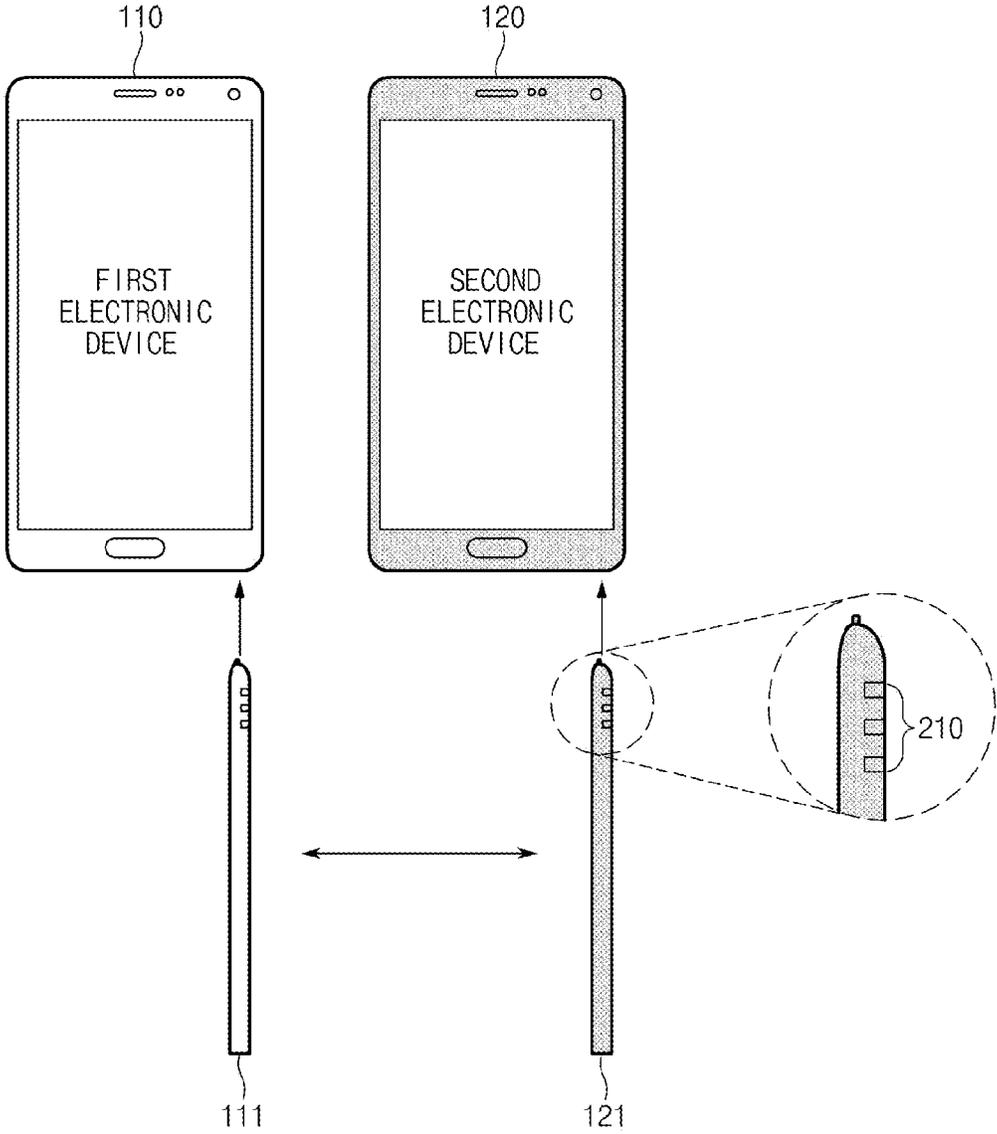


FIG. 2

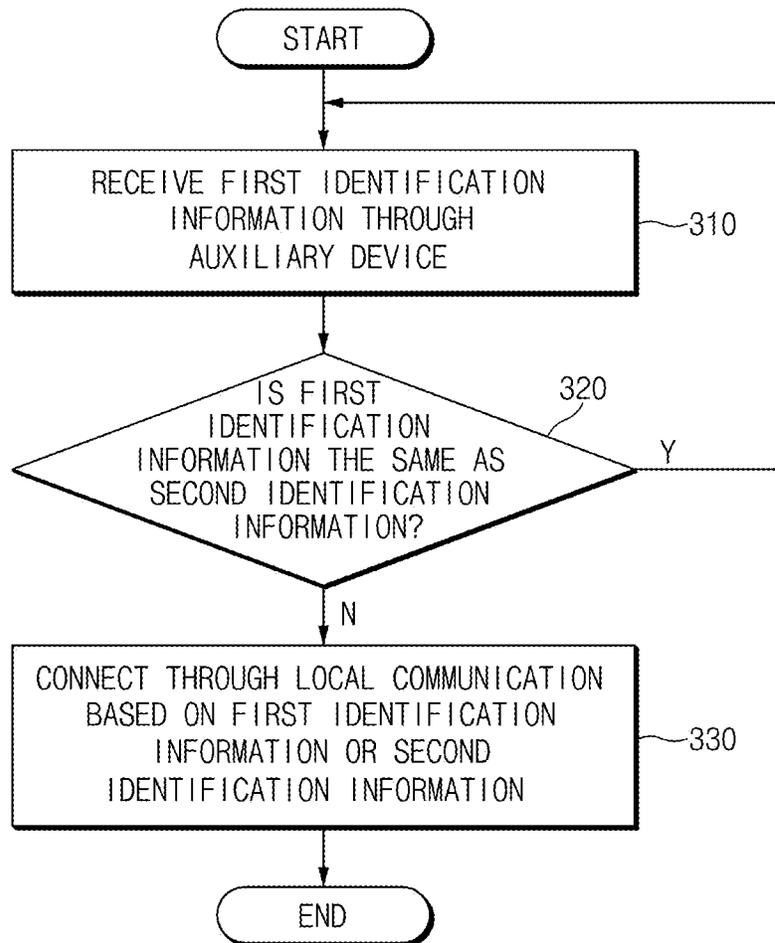


FIG. 3

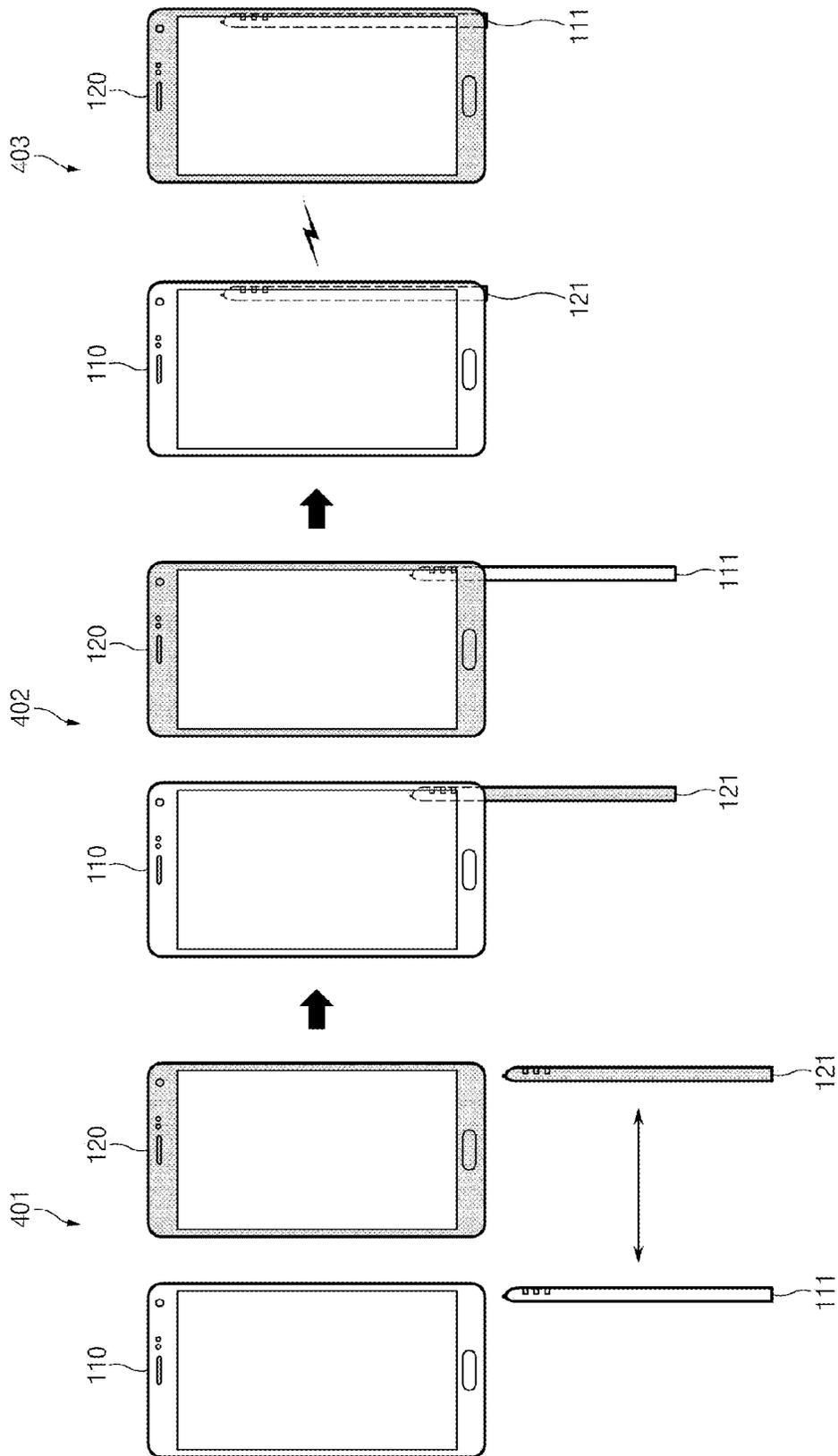


FIG. 4

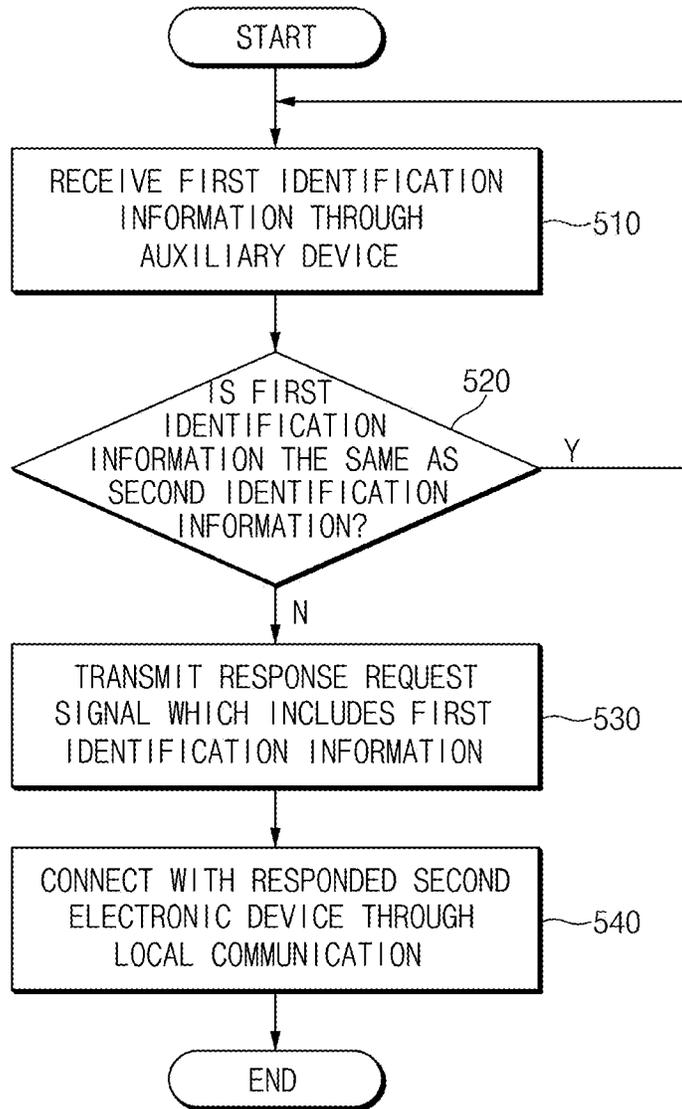


FIG. 5

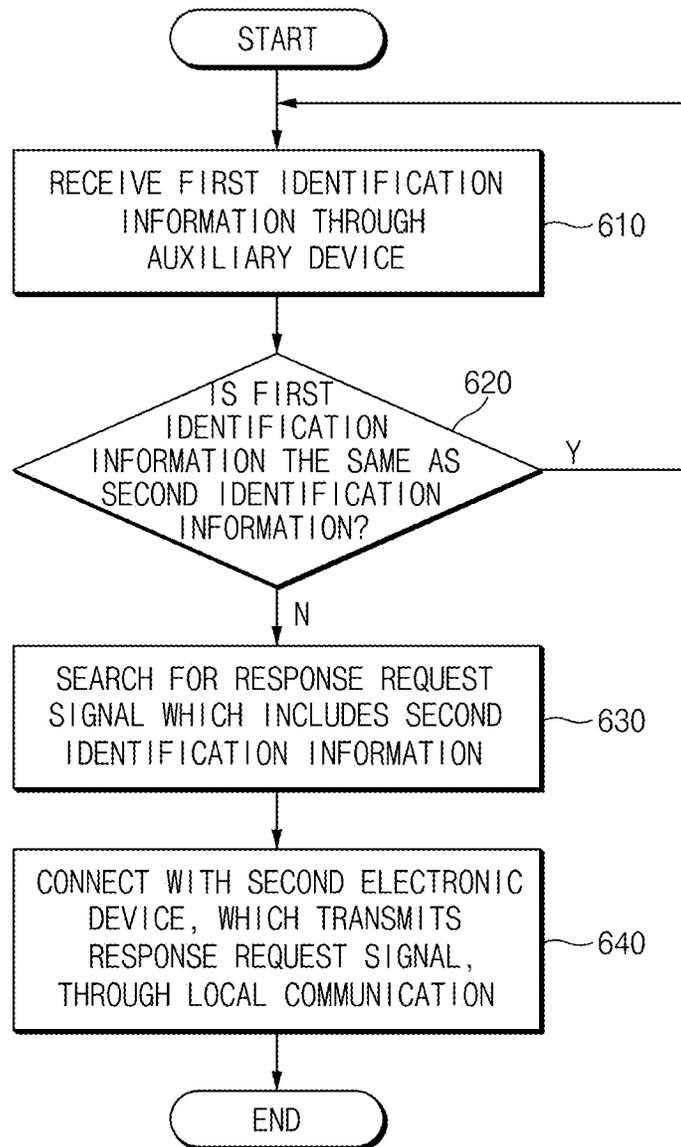


FIG. 6

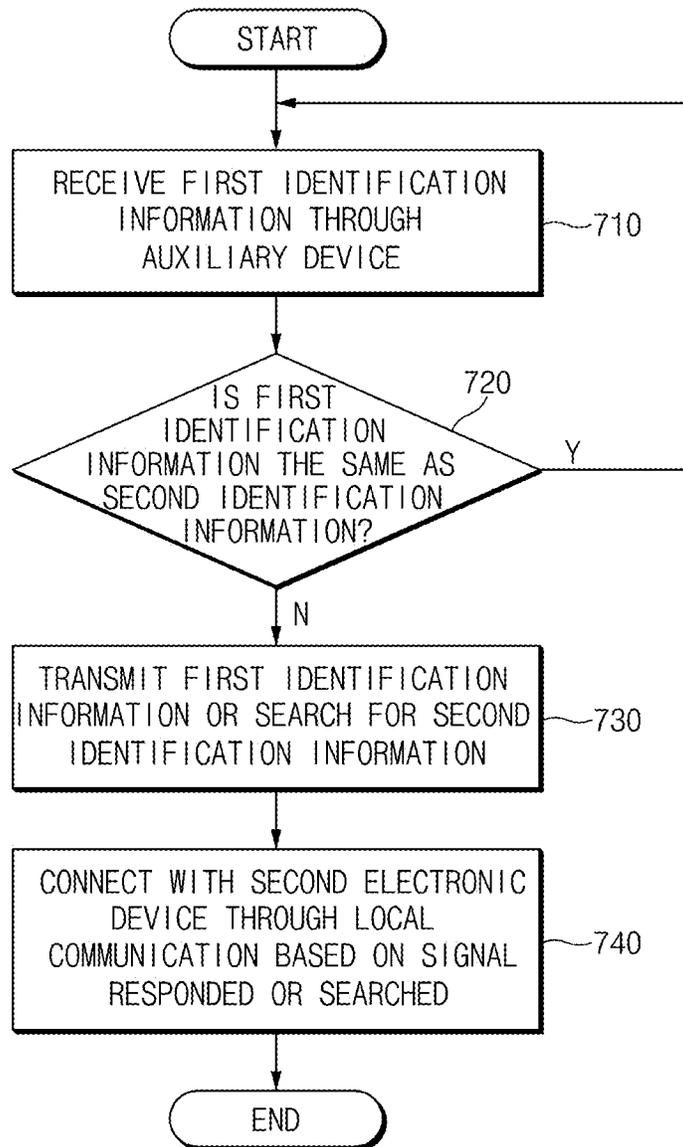


FIG. 7

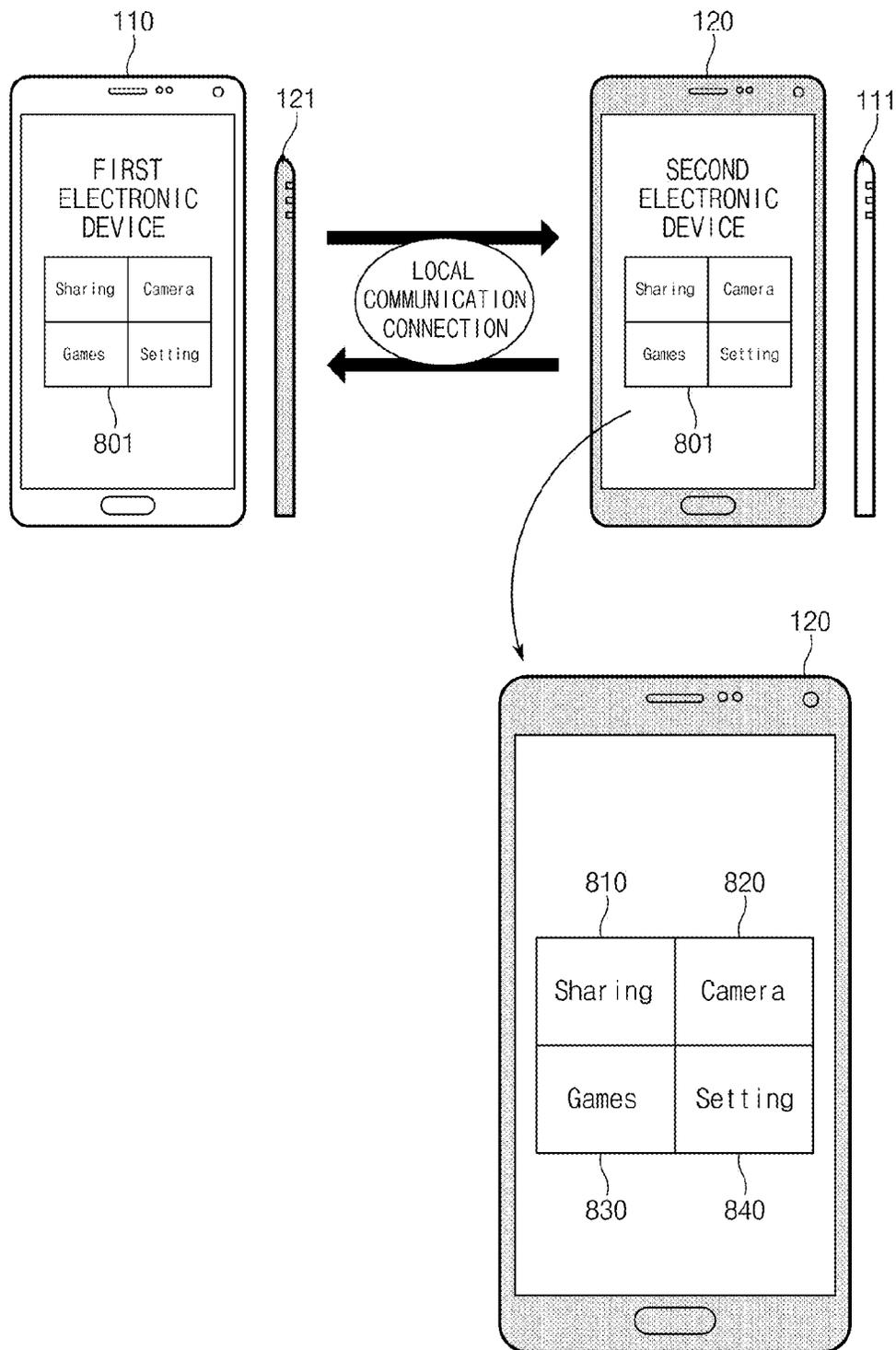


FIG. 8

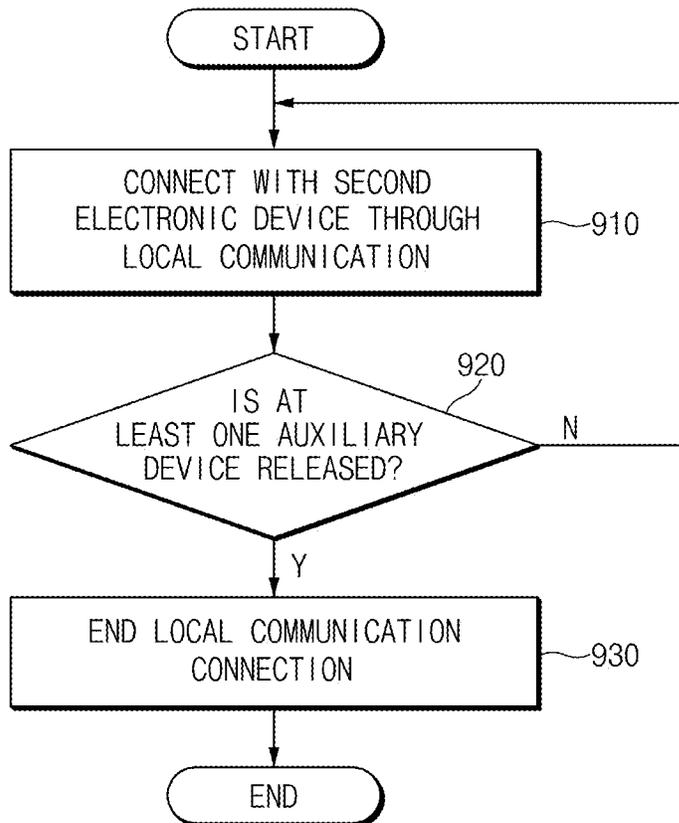


FIG. 9

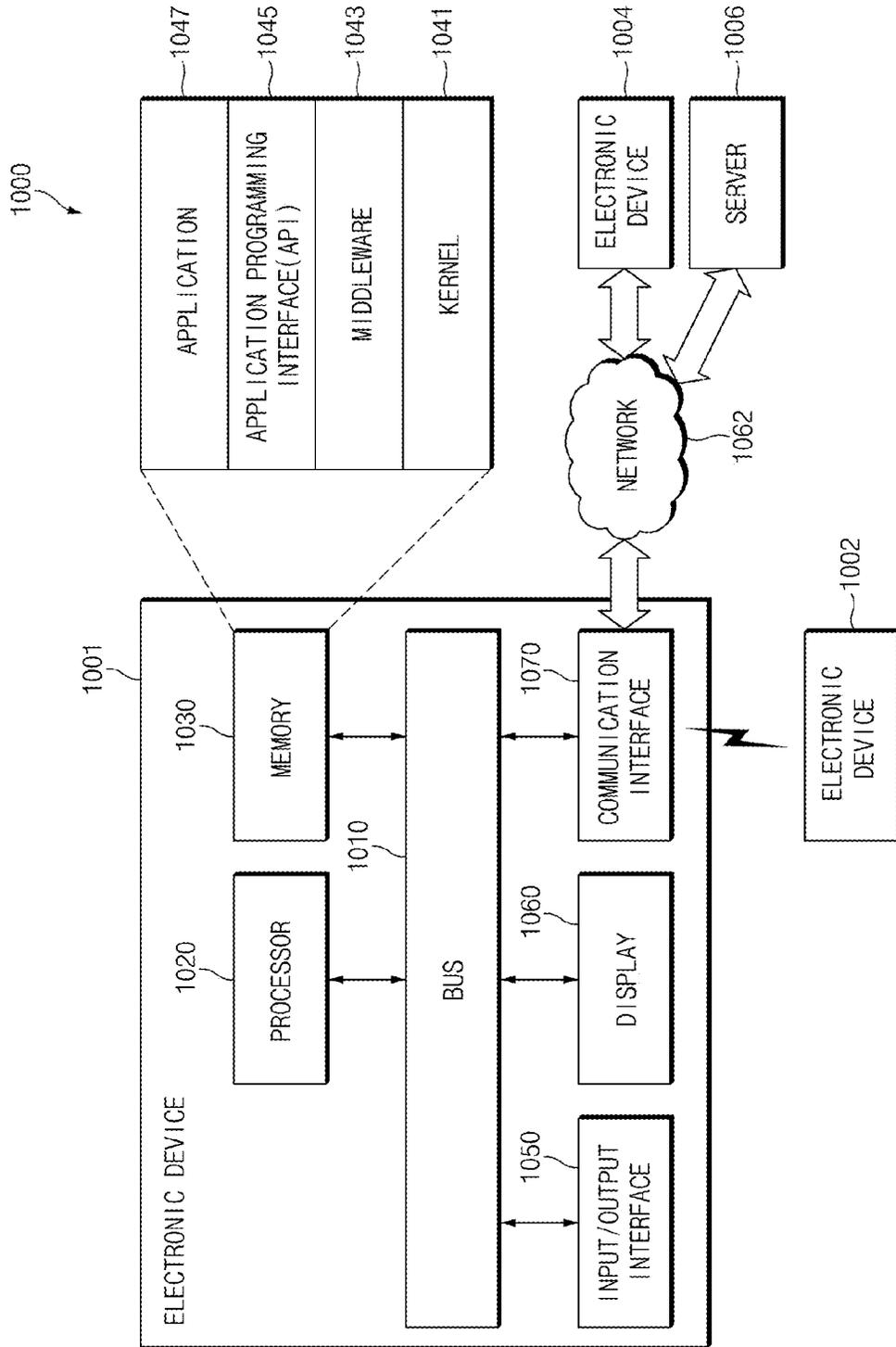


FIG. 10

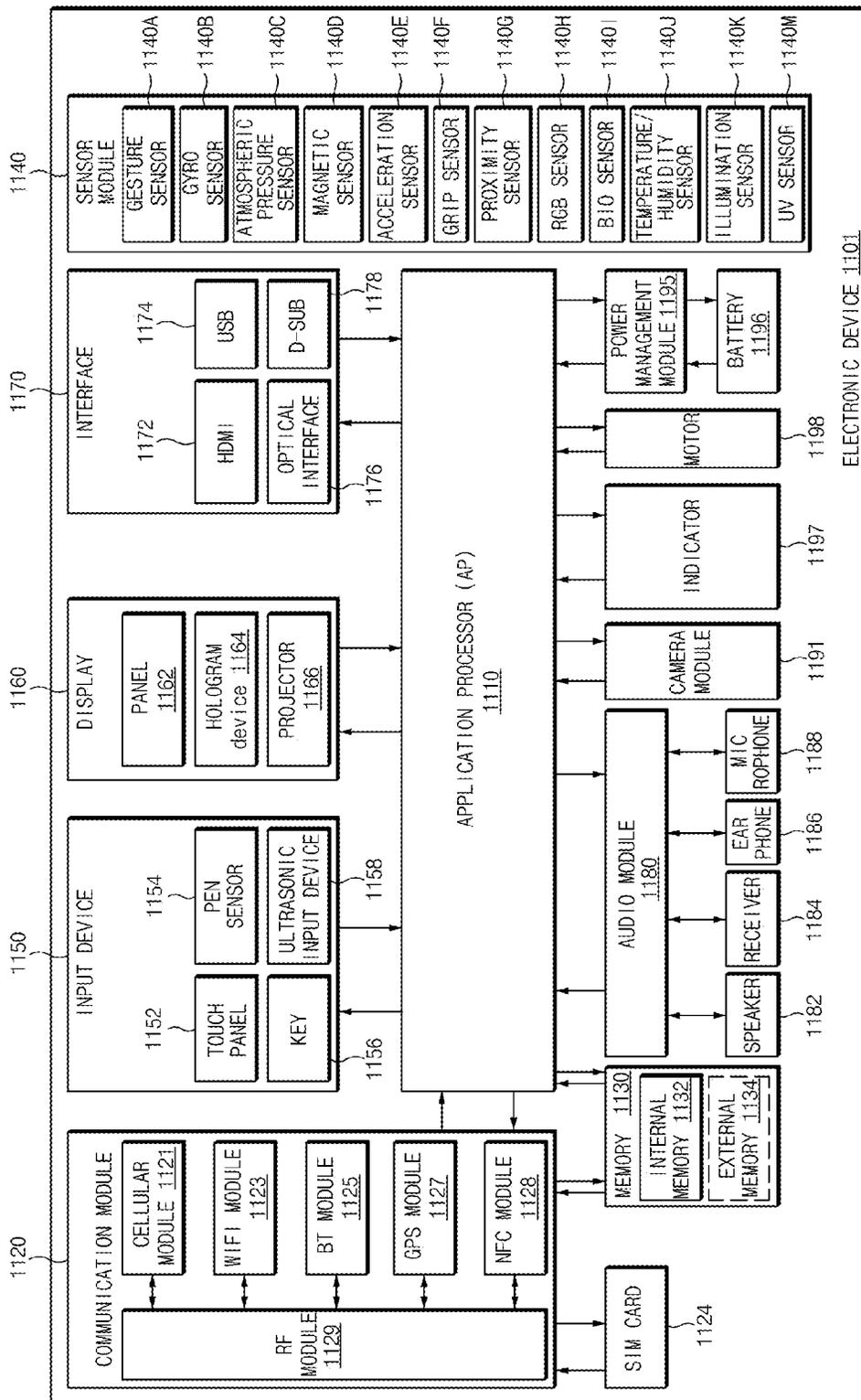


FIG. 11

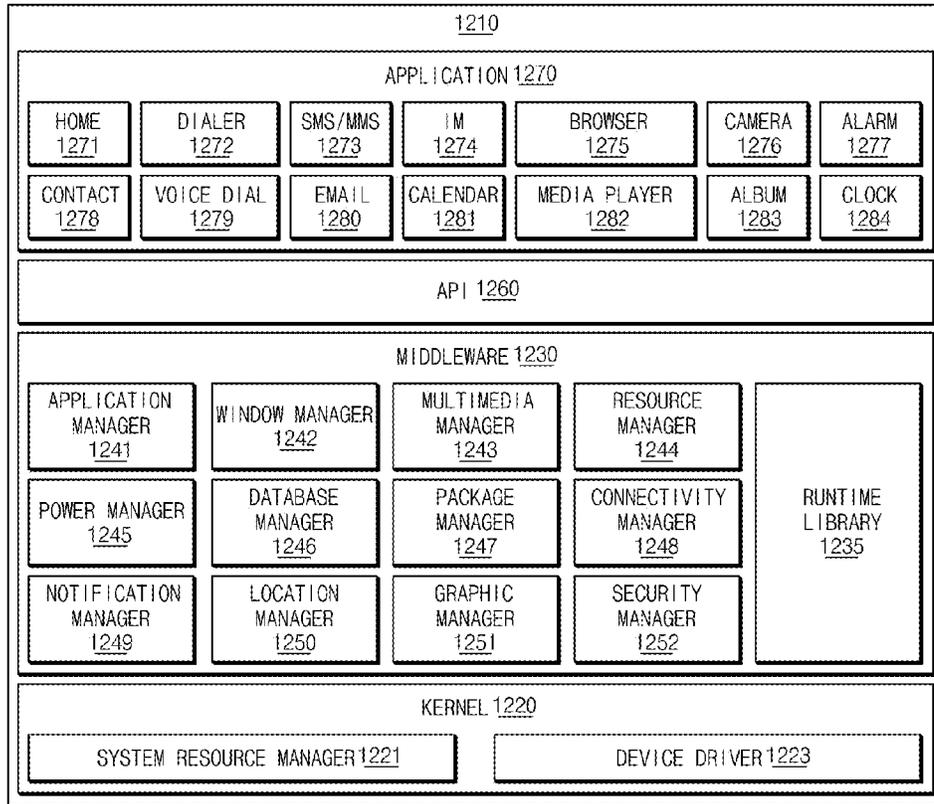


FIG. 12

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METHOD FOR CONNECTING LOCAL COMMUNICATION AND ELECTRONIC DEVICE SUPPORTING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION AND CLAIM OF PRIORITY

The present application is related to and claims the benefit under 35 U.S.C. § 119(a) of a Korean patent application filed on Mar. 23, 2015 in the Korean Intellectual Property Office and assigned Serial number 10-2015-0040104, the entire disclosure of which is hereby incorporated by reference.

TECHNICAL FIELD

The present disclosure relates to a method for transmitting and receiving data through local communication between electronic devices and an electronic device supporting the same.

BACKGROUND

An electronic device, such as a smart phone or a tablet personal computer (PC), is able to perform various functions, such as call connection, message sending/receiving, media output, and the like. The electronic device transmits and receives not only wireless data through a base station or the like but also data through local wireless communication with an adjacent device.

In the case where an electronic device is connected to a surrounding device through local wireless communication, such as Wi-Fi Direct, a conventional communication method requires the complex setting procedure including, but not limited to, moving the device at a distance where near filed communication (NFC) is able to operate, searching for the device to connect, and executing data communication. In the case where the setting and connection of the local wireless communication are inconvenient, some users use long distance wireless communication (a manner to transmit data through a base station) instead of the local wireless communication (direct connection between devices) for tasks, such as screen sharing, file transmission, and the like.

SUMMARY

To address the above-discussed deficiencies, it is a primary object to provide at least the advantages described below. Accordingly, an aspect of the present disclosure is to provide a communication method for performing local wireless communication easily using an auxiliary device connectable with an electronic device.

In accordance with an aspect of the present disclosure, a communication method may be performed at an electronic device and may include receiving first identification information through an auxiliary device which is connectable with the electronic device, comparing the received first identification information with second identification information stored in the electronic device, and connecting with an external electronic device through local communication based on at least one of the first identification information or the second identification information, if the first identification information and the second identification information are different from each other

Other aspects, advantages, and salient features of the disclosure will become apparent to those skilled in the art from the following detailed description, which, taken in

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conjunction with the annexed drawings, discloses various embodiments of the present disclosure.

Before undertaking the DETAILED DESCRIPTION below, it may be advantageous to set forth definitions of certain words and phrases used throughout this patent document: the terms “include” and “comprise,” as well as derivatives thereof, mean inclusion without limitation; the term “or,” is inclusive, meaning and/or; the phrases “associated with” and “associated therewith,” as well as derivatives thereof, may mean to include, be included within, interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, juxtapose, be proximate to, be bound to or with, have, have a property of, or the like; and the term “controller” means any device, system or part thereof that controls at least one operation, such a device may be implemented in hardware, firmware or software, or some combination of at least two of the same. It should be noted that the functionality associated with any particular controller may be centralized or distributed, whether locally or remotely. Definitions for certain words and phrases are provided throughout this patent document, those of ordinary skill in the art should understand that in many, if not most instances, such definitions apply to prior, as well as future uses of such defined words and phrases.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present disclosure and its advantages, reference is now made to the following description taken in conjunction with the accompanying drawings, in which like reference numerals represent like parts:

FIG. 1 is a block diagram illustrating a local communication network according to various embodiments of the present disclosure;

FIG. 2 is a schematic diagram of an electronic device which uses an input pen as an auxiliary device, according to various embodiments of the present disclosure;

FIG. 3 is a flowchart illustrating a communication method using an auxiliary device, according to various embodiments of the present disclosure;

FIG. 4 is a schematic diagram for describing a method in which a communication connection is made by exchanging auxiliary devices, according to various embodiments of the present disclosure;

FIG. 5 is a flowchart illustrating a method for connecting through local communication using first identification information, according to various embodiments of the present disclosure;

FIG. 6 is a flowchart illustrating a method for connecting through local communication using second identification information, according to various embodiments of the present disclosure;

FIG. 7 is a flowchart illustrating a method for connecting through local communication using first and second identification information, according to various embodiments of the present disclosure;

FIG. 8 is a schematic diagram illustrating a screen for operating a local communication connection, according to various embodiments of the present disclosure;

FIG. 9 is a flowchart illustrating a communication end method according to various embodiments of the present disclosure;

FIG. 10 is a diagram illustrating an electronic device in a network environment, according to various embodiments of the present disclosure;

FIG. 11 is a block diagram illustrating an electronic device according to various embodiments of the present disclosure; and

FIG. 12 is a block diagram of a program module according to various embodiments of the present disclosure.

Throughout the drawings, it should be noted that like reference numbers are used to depict the same or similar elements, features, and structures.

DETAILED DESCRIPTION

FIGS. 1 through 12, discussed below, and the various embodiments used to describe the principles of the present disclosure in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the disclosure. Those skilled in the art will understand that the principles of the present disclosure may be implemented in any suitably arranged electronic devices. Various embodiments of the present disclosure may be described with reference to accompanying drawings. Accordingly, those of ordinary skill in the art will recognize that modification, equivalent, and/or alternative on the various embodiments described herein can be variously made without departing from the scope and spirit of the present disclosure. With regard to description of drawings, similar components may be marked by similar reference numerals.

In the disclosure disclosed herein, the expressions “have”, “may have”, “include” and “comprise”, or “may include” and “may comprise” used herein indicate existence of corresponding features (e.g., elements such as numeric values, functions, operations, or components) but do not exclude presence of additional features.

In the disclosure disclosed herein, the expressions “A or B”, “at least one of A or/and B”, or “one or more of A or/and B”, and the like used herein may include any and all combinations of one or more of the associated listed items. For example, the term “A or B”, “at least one of A and B”, or “at least one of A or B” may refer to all of the case (1) where at least one A is included, the case (2) where at least one B is included, or the case (3) where both of at least one A and at least one B are included.

The terms, such as “first”, “second”, and the like used herein may refer to various elements of various embodiments of the present disclosure, but do not limit the elements. Furthermore, such terms may be used to distinguish one element from another element. For example, “a first user device” and “a second user device” indicate different user devices, regardless of the order or importance. For example, “a first user device” and “a second user device” indicate different user devices. For example, without departing the scope of the present disclosure, a first element may be referred to as a second element, and similarly, a second element may be referred to as a first element.

It will be understood that when an element (e.g., a first element) is referred to as being “(operatively or communicatively) coupled with/to” or “connected to” another element (e.g., a second element), it can be directly coupled with/to or connected to the other element or an intervening element (e.g., a third element) may be present. In contrast, when an element (e.g., a first element) is referred to as being “directly coupled with/to” or “directly connected to” another element (e.g., a second element), it should be understood that there are no intervening element (e.g., a third element).

According to the situation, the expression “configured to” used herein may be used as, for example, the expression “suitable for”, “having the capacity to”, “designed to”, “adapted to”, “made to”, or “capable of”. The term “con-

figured to” must not mean only “specifically designed to” in hardware. Instead, the expression “a device configured to” may mean that the device is “capable of” operating together with another device or other components. CPU, for example, a “processor configured to perform A, B, and C” may mean a dedicated processor (e.g., an embedded processor) for performing a corresponding operation or a generic-purpose processor (e.g., a central processing unit (CPU) or an application processor) which may perform corresponding operations by executing one or more software programs which are stored in a memory device.

Terms used in this specification are used to describe specified embodiments of the present disclosure and are not intended to limit the scope of the present disclosure. The terms of a singular form may include plural forms unless otherwise specified. Unless otherwise defined herein, all the terms used herein, which include technical or scientific terms, may have the same meaning that is generally understood by a person skilled in the art. It will be further understood that terms, which are defined in a dictionary and commonly used, should also be interpreted as is customary in the relevant related art and not in an idealized or overly formal detect unless expressly so defined herein in various embodiments of the present disclosure. In some cases, even if terms are terms which are defined in the specification, they may not be interpreted to exclude embodiments of the present disclosure.

Hereinafter, electronic devices according to an embodiment of the present disclosure will be described with reference to the accompanying drawings. The term “user” used herein may refer to a person who uses an electronic device or may refer to a device (e.g., an artificial electronic device) that uses an electronic device.

FIG. 1 is a block diagram illustrating a local communication network according to various embodiments of the present disclosure.

Referring to FIG. 1, a first electronic device 110 and a second electronic device 120 may be connected to each other through local wireless communication. Each of the first and second electronic devices 110 and 120 may include a communication module (not illustrated) which performs a role of an interface for the local wireless communication. According to various embodiments of the present disclosure, the communication module may support data communication by Wireless Fidelity (Wi-Fi) Direct. The Wi-Fi Direct may refer to a local communication method which makes it possible to directly form a channel between electronic devices, which support not an Internet network but Wi-Fi, and to transmit and receive data. The first electronic device 110 and the second electronic device 120 may perform operations, such as file transmission, screen mirroring, and the like, with the Wi-Fi Direct.

The first electronic device 110 and the second electronic device 120 may set the local wireless communication using a first auxiliary device 111 and a second auxiliary device 121 which the first and second electronic devices 110 and 120 are respectively equipped with, so as to be connected to each other.

The first electronic device 110 and the second electronic device 120 may be connected to the first auxiliary device 111 and the second auxiliary device 121, respectively. The first auxiliary device 111 (e.g., a touch pen) may be a device which is connected to or disposed to be adjacent to the first electronic device 110 so as to perform a function. The second auxiliary device 121 (e.g., a touch pen) may be a device which is connected to or disposed to be adjacent to the second electronic device 120 so as to perform a function.

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According to various embodiments of the present disclosure, the first auxiliary device **111** and the second auxiliary device **121** may be devices which of the shapes are the same as or similar to each other so as to be compatible with each other.

According to various embodiments of the present disclosure, the first auxiliary device **111** and the second auxiliary device **121** may be accessory devices each of which has shapes or functions corresponding to the first electronic device **110** or the second electronic device **120**. For example, the first auxiliary device **111** and the second auxiliary device **121** may be an input pen, a keyboard device, a battery cover, a case, or a decoration device (e.g., an electronic sticker, an ornament which includes a simple circuitry, or the like).

According to various embodiments of the present disclosure, the first auxiliary device **111** may be inserted into and connected to the first electronic device **110** or the second electronic device **120** or may be attached to the outside so as to be connected therewith. In various embodiments, the first auxiliary device **111** may include a contact area, which is electrically connected to the first electronic device **110** or the second electronic device **120**, in at least a portion of the first auxiliary device **111**.

According to various embodiments of the present disclosure, the first auxiliary device **111** may include a storage chip or a memory therein and may store identification information (e.g., A001) about the first electronic device **110**. In the case where the first auxiliary device **111** is connected to the first electronic device **110** or the second electronic device **120**, the first auxiliary device **111** may provide the stored identification information about the first electronic device **110** to the connected electronic device (e.g., the first electronic device **110** or the second electronic device **120**). The first electronic device **110** or the second electronic device **120** may determine whether to execute or end the local wireless communication based on the identification information received through the first auxiliary device **111**. For example, in the case where the first auxiliary device **111** is inserted into the second electronic device **120**, the second electronic device **120** may compare the identification information (e.g., A001) provided from the first auxiliary device **111** with identification information (e.g., B001) about the second electronic device **120** which is stored in inside the second electronic device **120**. In the case where the pieces of identification information are different from each other, the second electronic device **120** may start a local wireless communication function. For another example, in the case where the first auxiliary device **111** is inserted into the first electronic device **110**, the first electronic device **110** may compare the identification information (e.g., A001) provided from the first auxiliary device **111** with the identification information (e.g., A001), which is stored in inside the first electronic device **110**, about the first electronic device **110**. In the case where the pieces of identification information are the same as each other, the first electronic device **110** may end a local wireless communication function which is being executed.

The second auxiliary device **121** may perform a function which is the same as or similar to the first auxiliary device **111**. Shapes or functions of the first auxiliary device **111** and the second auxiliary device **121** may be the same as or similar to each other. Unlike the first auxiliary device **111**, the second auxiliary device **121** may store the identification information (e.g., B001) about the second electronic device **120**.

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Detailed information about a communication method using an auxiliary device will be provided through FIGS. **2** to **12**.

FIG. **2** is a schematic diagram of an electronic device which uses an input pen as an auxiliary device, according to various embodiments of the present disclosure. In FIG. **2**, an embodiment of the present disclosure is exemplified as each of the first auxiliary device **111** and the second auxiliary device **121** is an input pen which is inserted into the inside of an electronic device so as to be connected therewith. However, the scope and spirit of the present disclosure may not be limited thereto.

Referring to FIG. **2**, the first electronic device **110** or the second electronic device **120** may be connected to the first auxiliary device **111** or the second auxiliary device **121** (the connection may include the case where the auxiliary device is disposed to be adjacent to an electronic device and is used). Since being the same as or similar to each other in shape or function, the first auxiliary device **111** and the second auxiliary device **121** may be compatible with each other.

The first auxiliary device **111** may be inserted into and connected to the second electronic device **120** as well as the first electronic device **110**. In the case where the first auxiliary device **111** is inserted into and connected to the second electronic device **120**, the second electronic device **120** may receive identification information (e.g., the identification information about the first electronic device **110**) stored in the first auxiliary device **111**. The second electronic device **120** may start a connection through local communication with the first electronic device **110** based on the identification information (e.g., identification information about the first electronic device **110**) received from the first auxiliary device **111** and the identification information (e.g., identification information about the second electronic device **120**) stored in the second electronic device **120**.

In the case where the first auxiliary device **111** is inserted into and connected to the second electronic device **120**, the second auxiliary device **121** can be released from the second electronic device **120**. In this case, the second auxiliary device **121** can be inserted into and connected to the first electronic device **110**. The first electronic device **110** can receive the identification information (e.g., the identification information about the second electronic device **120**) stored in the second auxiliary device **121**. The first electronic device **110** can start a connection with the second electronic device **120** through local communication based on the identification information (e.g., the identification information about the second electronic device **120**) received from the second auxiliary device **121** and the identification information (e.g., the identification information about the first electronic device **110**) stored in the first electronic device **110**.

According to various embodiments of the present disclosure, each of the first auxiliary device **111** and the second auxiliary device **121** can include a contact area **210**. In the case where the contact area **210** is placed inside the electronic device (e.g., the first electronic device **110** or the second electronic device **120**), the contact area **210** can be physically connected to the electronic device through a pogo pin which is disposed inside the electronic device. The first auxiliary device **111** and the second auxiliary device **121** can transmit and receive electrical data to and from the electronic device (e.g., the first electronic device **110** or the second electronic device **120**) through the contact area **210**. For example, the first auxiliary device **111** and the second auxiliary device **121** can provide the identification informa-

tion stored in each of the auxiliary devices to the first electronic device **110** or the second electronic device **120** through the contact area **210**.

In the case where the identification information received from a connected auxiliary device is different from the identification information stored in the electronic device connected with the auxiliary device, the first electronic device **110** or the second electronic device **120** can perform the connection through local communication based on the identification information. Additional information about the local communication connection will be described through FIGS. **3** to **7**.

Below, an embodiment of the present disclosure will be exemplified as an auxiliary device is an input pen. However, the scope and spirit of the present disclosure may not be limited thereto. For example, the present disclosure can be applied to the case where the auxiliary device is a battery cover, a keyboard device, a case, a decoration device, or the like.

FIG. **3** is a flowchart illustrating a communication method using an auxiliary device, according to various embodiments of the present disclosure.

Referring to FIG. **3**, in operation **310**, an electronic device (e.g., the first electronic device **110** or the second electronic device **120**) can receive first identification information from the connected auxiliary device (e.g., the first auxiliary device **111** or the second auxiliary device **121**). For example, in the case where the first auxiliary device **111** is connected, the first identification information can be identification information about the first electronic device **110**. In the case where the second auxiliary device **121** is connected, the first identification information can be identification information about the second electronic device **120**.

The auxiliary device can provide the identification information (e.g., A001, B001, or the like) stored in the internal chip or the like, to the connected electronic device. The electronic device (e.g., the first electronic device **110** or the second electronic device **120**) can determine whether to perform a connection through local communication based on the received first identification information.

In operation **320**, the electronic device (e.g., the first electronic device **110** or the second electronic device **120**) can determine whether the first identification information received from the auxiliary device (e.g., the first auxiliary device **111** or the second auxiliary device **121**) is the same as second identification information (identification information about the electronic device itself) stored in the electronic device in advance.

As illustrated in FIG. **2**, in the case where the first auxiliary device **111** is inserted into the first electronic device **110**, both the first identification information and the second identification information can be the same as the identification information of the first electronic device **110**. In this case, the first electronic device **110** may not perform a separate connection through the local communication.

Likewise, in the case where the second auxiliary device **121** is inserted into the second electronic device **120**, both the first identification information and the second identification information can be the same as the identification information of the second electronic device **120**. In this case, the second electronic device **120** may not perform a separate connection through the local communication.

In operation **330**, in the case where the first identification information is different from the second identification information, the electronic device (e.g., the first electronic device **110** or the second electronic device **120**) can perform the

connection through the local communication based on the first and second identification information.

In an exemplification of FIG. **2**, in the case where the second auxiliary device **121** is inserted into the first electronic device **110**, the first identification information can be the identification information (e.g., B001) of the second electronic device **120**, and the second identification information can be the identification information (e.g., A001) of the first electronic device **110**. In this case, since the first identification information and the second identification information have different values, the first electronic device **110** can perform signal transmission or signal search for the connection through the local communication based on the first and second identification information.

Likewise, in the case where the first auxiliary device **111** is inserted into the second electronic device **120**, the first identification information can be the identification information (e.g., A001) of the first electronic device **110**, and the second identification information can be the identification information (e.g., B001) of the second electronic device **120**. In this case, since the first identification information and the second identification information have different values, the second electronic device **120** can perform signal transmission or signal search for the connection through the local communication based on the first and second identification information. Information about the signal transmission or the signal search will be described through FIGS. **5** to **7**.

FIG. **4** is a schematic diagram for describing a method in which a communication connection is made by exchanging auxiliary devices, according to various embodiments of the present disclosure. In FIG. **4**, an embodiment of the present disclosure is exemplified as input pens are exchanged. However, the scope and spirit of the present disclosure may not be limited thereto.

Referring to FIG. **4**, in state **401**, the first electronic device **110** can be set to correspond to the first auxiliary device **111** by default. The first auxiliary device **111** can be configured to store identification information (e.g., A001) of the first electronic device **110**.

The second electronic device **120** can be set to correspond to the second auxiliary device **121** by default. The second auxiliary device **121** can be configured to store identification information (e.g., B001) of the second electronic device **120**.

Shapes or functions of the first auxiliary device **111** and the second auxiliary device **121** can be the same as or similar to each other. The first auxiliary device **111** and the second auxiliary device **121** can be exchanged each other so as to be connected with the second electronic device **120** and the first electronic device **110**, respectively.

In state **402**, in the case where a user wants to connect the first electronic device **110** and the second electronic device **120** through local communication (e.g., Wi-Fi Direct communication), the local communication can be initiated by exchanging each of auxiliary devices (e.g., the first auxiliary device **111** and the second auxiliary device **121**).

In state **403**, in the case where the auxiliary devices are exchanged and inserted, each electronic device can receive identification information stored in each auxiliary device through a contact area of the auxiliary device. Each electronic device can determine that the identification information received through the auxiliary device is different from the identification information stored in each electronic device and can transmit or search for a signal for the local wireless communication.

FIG. **5** is a flowchart illustrating a method for connecting through local communication using first identification information, according to various embodiments of the present

disclosure. Below, an embodiment of the present disclosure will be described based on the first electronic device **110**. However, an embodiment of the present disclosure can be applied to the second electronic device **120**.

Referring to FIG. **5**, in operation **510**, the first electronic device **110** can receive first identification information from a connected auxiliary device (e.g., the first auxiliary device **111** or the second auxiliary device **121**). In the case where the first auxiliary device **111** is connected, the first identification information can be identification information about the first electronic device **110**. In the case where the second auxiliary device **121** is connected, the first identification information can be identification information about the second electronic device **120**.

In operation **520**, the first electronic device **110** can determine whether the first identification information received from the auxiliary device is the same as second identification information (the identification information about the first electronic device **110**) stored in the first electronic device in advance. In the case where the first identification information and the second identification information are the same as each other, the first electronic device **110** can maintain a current operation state without performing local wireless communication.

In operation **530**, in the case where the first identification information is different from the second identification information, the first electronic device **110** can transmit a response request signal, which includes the first identification information, to the second electronic device **120**. According to various embodiments of the present disclosure, the response request signal can be transmitted to a plurality of devices in a multicast or broadcast manner.

In the case where the response request signal which includes the identification information about the second electronic device **120** is transmitted, the second electronic device **120** can transmit a response signal to the first electronic device **110** for the local wireless communication.

In operation **540**, the first electronic device **110** can ascertain the response signal corresponding to the response request signal and can be connected to the second electronic device **120** through the local wireless communication. After a channel is formed through the local wireless communication, the first electronic device **110** can perform data communication, such as file transmission, screen mirroring, data sharing, or the like, with the second electronic device **120**.

FIG. **6** is a flowchart illustrating a method for connecting through local communication using second identification information, according to various embodiments of the present disclosure. Below, an embodiment of the present disclosure will be described based on the first electronic device **110**. However, an embodiment of the present disclosure can be applied to the second electronic device **120**.

Referring to FIG. **6**, operation **610** and operation **620** can be the same as operation **510** and operation **520** of FIG. **5**, respectively.

In operation **630**, in the case where first identification information is different from second identification information, the first electronic device **110** can search for a surrounding signal and can determine whether there is a response request signal which includes the second identification information (e.g., the identification information about the first electronic device **110**). According to various embodiments of the present disclosure, one (e.g., the second electronic device **120**) of surrounding devices of the first electronic device **110** can be equipped with the first auxiliary device **111** which was inserted into the first electronic device

110 and can transmit the response request signal which includes the identification information about the first electronic device **110**.

In operation **640**, in the case where the response request signal transmitted from the second electronic device **120** includes the identification information about the first electronic device **110**, the first electronic device **110** can transmit a response signal corresponding to the response request signal and can be connected to the local wireless communication. According to various embodiments of the present disclosure, the response signal can be transmitted in a unicast manner.

FIG. **7** is a flowchart illustrating a method for connecting through local communication using first and second identification information, according to various embodiments of the present disclosure. Below, an embodiment of the present disclosure will be described based on the first electronic device **110**. However, an embodiment of the present disclosure can be applied to the second electronic device **120**.

Referring to FIG. **7**, operation **710** and operation **720** can be the same as operation **510** and operation **520** of FIG. **5**, respectively.

In operation **730**, the first electronic device **110** can recognize the second electronic device **120** based on at least one of first identification information or second identification information. For example, the first electronic device **110** can transmit a response request signal, which includes the first identification information (e.g., the identification information about the second electronic device **120**), to the second electronic device **120** and can simultaneously search for a surrounding signal for determining whether there is a response request signal which includes the second identification information (e.g., the identification information about the first electronic device **110**). The first electronic device **110** can perform the signal transmission and the signal search at the same time, thereby increasing the efficiency in searching for the second electronic device **120**.

In operation **740**, the first electronic device **110** can perform data communication, such as file transmission, screen mirroring, data sharing, or the like, with the second electronic device **120**.

According to various embodiments of the present disclosure, based on state information about the device, such as battery remaining capacity, an operation state of a processor, and the like, the first electronic device **110** can recognize the second electronic device **120** using at least one method of the signal transmission or the signal search. For example, in the case where the battery remaining capacity is greater than or equal to a specific value, the first electronic device **110** can perform the signal transmission and the signal search at the same time. However, in the case where the battery remaining capacity is lower than the specific value, the first electronic device **110** can recognize the second electronic device **120** using the signal search without transmitting a signal separately.

FIG. **8** is a schematic diagram illustrating a screen for operating a local communication connection, according to various embodiments of the present disclosure. In FIG. **8**, a user interface (UI) screen **801** is, but is not limited to, an example.

Referring to FIG. **8**, the first electronic device **110** can be set to the first auxiliary device **111** by default and the second electronic device **120** can be set to the second auxiliary device **121**. The first electronic device **110** and the second electronic device **120** can start local communication by exchanging auxiliary devices.

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According to various embodiments of the present disclosure, if the first electronic device **110** or the second electronic device **120** is connected to the local wireless communication by exchanging the auxiliary devices, the first electronic device **110** or the second electronic device **120** can provide the UI screen **801** which includes a function capable of being performed through the local wireless communication or a setting associated with the function. For example, the UI screen **801** can include file sharing **810**, camera execution **820**, games execution **830**, setting **840**, and the like.

According to various embodiments of the present disclosure, the UI screens **801** respectively executed in the first electronic device **110** and the second electronic device **120** can operate at the same time in conjunction with each other. For example, in the case where a user executes the file sharing **801** in the first electronic device **110**, the second electronic device **120** can execute the file sharing **810** at the same time, and thus the second electronic device **120** can be changed to a state where file transmission and reception is possible. For another example, in the case where the camera execution **820** is performed in the first electronic device **110**, a camera execution screen can be mirrored in the second electronic device **120** at the same time, or the captured image by the first electronic device **110** can be respectively stored in the first and second electronic devices **110** and **120** based on a setting.

FIG. 9 is a flowchart illustrating a communication end method according to various embodiments of the present disclosure.

Referring to FIG. 9, in state **910**, the first electronic device **110** can be connected to the second electronic device **120** by exchanging auxiliary devices. The first electronic device **110** can perform a function such as file transmission, screen mirroring, data sharing, or the like performed with regard to the second electronic device **120**.

In operation **920**, the first electronic device **110** or the second electronic device **120** can determine whether at least one of auxiliary devices is released therefrom. If the auxiliary device is being continuously connected with the first electronic device **110** or the second electronic device **120**, data transmission can continue through the local communication.

In operation **930**, in the case where the auxiliary device is released from at least one of the first electronic device **110** or the second electronic device **120**, the corresponding electronic device can stop transmitting data and can end the local communication connection.

In FIG. 9, a communication ending method is, but is not limited to, an example. For example, in the case where the auxiliary device (e.g., the first auxiliary device **111** which is set at the first electronic device **110** by default and the second auxiliary device **121** which is set at the second electronic device **120** by default) which is set at each electronic device by default is connected again, the local communication can end according to a setting.

According to various embodiments of the present disclosure, a communication method performed at an electronic device can include receiving first identification information through an auxiliary device which is connectable with the electronic device, comparing the received first identification information with second identification information stored in the electronic device, and connecting with an external electronic device through local communication based on at least one of the first identification information or the second

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identification information, if the first identification information and the second identification information are different from each other.

According to various embodiments of the present disclosure, the connecting through the local communication can include transmitting a response request signal which includes the first identification information. The connecting through the local communication can include searching for a surrounding signal which includes the second identification information. The connecting through the local communication can include connecting to the local communication based on state information about the electronic device.

According to various embodiments of the present disclosure, the receiving of the first identification information can include connecting physically to the electronic device through a contact area included in the auxiliary device. The receiving of the first identification information can include receiving the first identification information through the contact area.

According to various embodiments of the present disclosure, the communication method can further include providing a user interface (UI) for the local communication through a display.

According to various embodiments of the present disclosure, the communication method can further include ending the local communication if a connection between the auxiliary device and the electronic device is released. The communication method can further include ending the local communication if the electronic device and an auxiliary device which is related with the electronic device in advance are connected with each other.

According to various embodiments of the present disclosure, a communication method performed between first and second electronic devices can include receiving first identification information through an auxiliary device, which is connectable with the first electronic device, at the first electronic device, comparing the received first identification information with second identification information, which is stored in the first electronic device, at the first electronic device, and connecting with the second electronic device through local communication based on at least one of the first or second identification information at the first electronic device, if the first and second identification information are different from each other.

According to various embodiments of the present disclosure, the connecting through the local communication can include transmitting a response request signal, which includes the first identification information, to the second electronic device at the first electronic device. The connecting through the local communication can include searching for a response request signal, which includes the second identification information, transmitted from the second electronic device at the first electronic device.

FIG. 10 is a diagram illustrating an electronic device in a network environment, according to various embodiments of the present disclosure.

Referring to FIG. 10, there is illustrated an electronic device **1001** in a network environment **1000** according to various embodiments of the present disclosure. The electronic device **1001** (e.g., the first electronic device **110** of FIG. 1) can include a bus **1010**, a processor **1020**, a memory **1030**, an input/output (I/O) interface **1050**, a display **1060**, and a communication interface **1070**. According to an embodiment of the present disclosure, the electronic device **1001** may not include at least one of the above-described components or can further include other component(s).

The bus **1010** can interconnect the above-described components **1010** to **1070** and can be a circuit for conveying communications (e.g., a control message and/or data) among the above-described components.

The processor **1020** can include one or more of a central processing unit (CPU), an application processor (AP), or a communication processor (CP). The processor **1020** can perform, for example, data processing or an operation associated with control and/or communication of at least one other component(s) of the electronic device **1001**.

The memory **1030** can include a volatile and/or nonvolatile memory. The memory **1030** can store instructions or data associated with at least one other component(s) of the electronic device **1001**. According to an embodiment of the present disclosure, the memory **1030** can store software and/or a program **1040**. The program **1040** can include, for example, a kernel **1041**, a middleware **1043**, an application programming interface (API) **1045**, and/or an application program (or an application) **1047**. At least a portion of the kernel **1041**, the middleware **1043**, or the API **1045** can be called an "operating system (OS)".

The kernel **1041** can control or manage system resources (e.g., the bus **1010**, the processor **1020**, the memory **1030**, and the like) that are used to execute operations or functions of other programs (e.g., the middleware **1043**, the API **1045**, and the application program **1047**). Furthermore, the kernel **1041** can provide an interface that allows the middleware **1043**, the API **1045**, or the application program **1047** to access discrete components of the electronic device **1001** so as to control or manage system resources.

The middleware **1043** can perform a mediation role such that the API **1045** or the application program **1047** communicates with the kernel **1041** to exchange data.

Furthermore, the middleware **1043** can process task requests received from the application program **1047** according to a priority. For example, the middleware **1043** can assign the priority, which makes it possible to use a system resource (e.g., the bus **1010**, the processor **1020**, the memory **1030**, or the like) of the electronic device **1001**, to at least one of the application program **1047**. For example, the middleware **1043** can process the one or more task requests according to the priority assigned to the at least one, which makes it possible to perform scheduling or load balancing on the one or more task requests.

The API **1045** can be an interface through which the application program **1047** controls a function provided by the kernel **1041** or the middleware **1043**, and can include, for example, at least one interface or function (e.g., an instruction) for a file control, a window control, image processing, a character control, or the like.

The I/O interface **1050** can transmit an instruction or data, input from a user or another external device, to other component(s) of the electronic device **1001**. Furthermore, the I/O interface **1050** can output an instruction or data, received from other component(s) of the electronic device **1001**, to a user or another external device.

The display **1060** can include, for example, a liquid crystal display (LCD), a light-emitting diode (LED) display, an organic LED (OLED) display, or a microelectromechanical systems (MEMS) display, or an electronic paper display. The display **1060** can display, for example, various contents (e.g., a text, an image, a video, an icon, a symbol, and the like) to a user. The display **1060** can include a touch screen and can receive, for example, a touch, gesture, proximity, or hovering input using an electronic pen or a portion of a user's body.

The communication interface **1070** can establish communication between the electronic device **1001** and an external electronic device (e.g., a first external electronic device **1002**, a second external electronic device **1004**, or a server **1006**). For example, the communication interface **1070** can be connected to a network **1062** through wireless communication or wired communication to communicate with an external device (e.g., a second external electronic device **1004** or a server **1006**).

The wireless communication can include at least one of, for example, LTE (long-term evolution), LTE-A (LTE Advance), CDMA (Code Division Multiple Access), WCDMA (Wideband CDMA), UMTS (Universal Mobile Telecommunications System), WiBro (Wireless Broadband), or GSM (Global System for Mobile Communications), or the like, as cellular communication protocol. Furthermore, the wireless communication can include, for example, a local area network **1064**. The local area network **1064** can include at least one of, for example, a wireless fidelity (Wi-Fi), a Bluetooth, a near field communication (NFC), a global navigation satellite system (GNSS), or the like. The GNSS can include at least one of a global positioning system (GPS), a global navigation satellite system (Glonass), Beidou Navigation Satellite System (hereinafter referred to as "Beidou"), Galileo (i.e., the European global satellite-based navigation system), or the like according to an available area or a bandwidth, and the like. In this specification, "GPS" and "GNSS" can be interchangeably used. The wired communication can include at least one of, for example, a universal serial bus (USB), a high definition multimedia interface (HDMI), a recommended standard-232 (RS-232), or a plain old telephone service (POTS). The network **1062** can include at least one of telecommunications networks, for example, a computer network (e.g., LAN or WAN), an Internet, or a telephone network.

Each of the first and second external electronic devices **1002** (e.g., the second electronic device **120** of FIG. 1) and **1004** can be a device of which the type is different from or the same as that of the electronic device **1001**. According to an embodiment of the present disclosure, the server **1006** can include a group of one or more servers. According to various embodiments, all or a part of operations that the electronic device **1001** will perform can be executed by another or plural electronic devices (e.g., the electronic devices **1002** and **1004** and the server **1006**). According to an embodiment, in the case where the electronic device **1001** executes any function or service automatically or in response to a request, the electronic device **1001** may not perform the function or the service internally, but, alternatively additionally, it can request at least a portion of a function associated with the electronic device **1001** at other device (e.g., the electronic devices **1002** and **1004** and the server **1006**). The other electronic device (e.g., the electronic device **1002** or **1004** or the server **1006**) can execute the requested function or additional function and can transmit the execution result to the electronic device **1001**. The electronic device **1001** can provide the requested function or service using the received result or can additionally process the received result to provide the requested function or service. To this end, for example, cloud computing, distributed computing, or client-server computing can be used.

FIG. 11 is a block diagram illustrating an electronic device **1101** according to various embodiments of the present disclosure. An electronic device **1101** can include, for example, all or a part of an electronic device **1001** illustrated in FIG. 10. The electronic device **1101** can include one or more processors (e.g., an application processor) **1110**, a

communication module **1120**, a subscriber identification module **1124**, a memory **1130**, a sensor module **1140**, an input device **1150**, a display **1160**, an interface **1170**, an audio module **1180**, a camera module **1191**, a power management module **1195**, a battery **1196**, an indicator **1197**, and a motor **1198**.

The processor **1110** can drive an operating system (OS) or an application to control a plurality of hardware or software components connected to the processor **1110** and can process and compute a variety of data. The processor **1110** can be implemented with a System on Chip (SoC), for example. According to an embodiment of the present disclosure, the processor **1110** can further include a graphic processing unit (GPU) and/or an image signal processor. The processor **1110** can include at least a part (e.g., a cellular module **1121**) of components illustrated in FIG. **11**. The processor **1110** can load and process an instruction or data, which is received from at least one of other components (e.g., a nonvolatile memory), and can store a variety of data at a nonvolatile memory.

The communication module **1120** can be configured the same as or similar to a communication interface **1070** of FIG. **10**. The communication module **1120** can include a cellular module **1121**, a wireless-fidelity (Wi-Fi) module **1123**, a Bluetooth (BT) module **1125**, a GNSS module (e.g., global positioning system (GPS) module, a Glonass module, Beidou module, or a Galileo module), a near field communication (NFC) module **1128**, and a radio frequency (RF) module **1129**.

The cellular module **1121** can provide voice communication, video communication, a character service, an Internet service or the like through a communication network. According to an embodiment of the present disclosure, the cellular module **1121** can perform discrimination and authentication of an electronic device **1101** within a communication network using a subscriber identification module **1124** (e.g., a SIM card), for example. According to an embodiment of the present disclosure, the cellular module **1121** can perform at least a portion of functions that the processor **1110** provides. According to an embodiment of the present disclosure, the cellular module **1121** can include a communication processor (CP).

Each of the Wi-Fi module **1123**, the BT module **1125**, the GNSS module **1127**, and the NFC module **1128** can include a processor for processing data exchanged through a corresponding module, for example. According to an embodiment of the present disclosure, at least a portion (e.g., two or more components) of the cellular module **1121**, the Wi-Fi module **1123**, the BT module **1125**, the GNSS module **1127**, and the NFC module **1128** can be included within one Integrated Circuit (IC) or an IC package.

The RF module **1129** can transmit and receive a communication signal (e.g., an RF signal). The RF module **1129** can include a transceiver, a power amplifier module (PAM), a frequency filter, a low noise amplifier (LNA), an antenna, or the like. According to various embodiments of the present disclosure, at least one of the cellular module **1121**, the Wi-Fi module **1123**, the BT module **1125**, the GNSS module **1127**, or the NFC module **1128** can transmit and receive an RF signal through a separate RF module.

The subscriber identification module **1124** can include, for example, a card and/or embedded SIM which includes a subscriber identification module and can include unique identification information (e.g., integrated circuit card identifier (ICCID)) or subscriber information (e.g., integrated mobile subscriber identity (IMSI)).

The memory **1130** (e.g., the memory **1030** of FIG. **10**) can include an internal memory **1132** or an external memory **1134**. For example, the internal memory **1132** can include at least one of a volatile memory (e.g., a dynamic random access memory (DRAM), a static RAM (SRAM), or a synchronous DRAM (SDRAM)), a nonvolatile memory (e.g., a one-time programmable read only memory (OTPROM), a programmable ROM (PROM), an erasable and programmable ROM (EPROM), an electrically erasable and programmable ROM (EEPROM), a mask ROM, a flash ROM, a NAND flash memory, or a NOR flash memory), a hard drive, or a solid state drive (SSD).

The external memory **1134** can include a flash drive, for example, compact flash (CF), secure digital (SD), micro secure digital (Micro-SD), mini secure digital (Mini-SD), extreme digital (xD), multimedia card (MMC), a memory stick, or the like. The external memory **1134** can be functionally and/or physically connected to the electronic device **1101** through various interfaces.

The sensor module **1140** can measure, for example, a physical quantity or can detect an operation state of the electronic device **1101**. The sensor module **1140** can convert the measured or detected information to an electric signal. The sensor module **1140** can include at least one of a gesture sensor **1140A**, a gyro sensor **1140B**, a barometric pressure sensor **1140C**, a magnetic sensor **1140D**, an acceleration sensor **1140E**, a grip sensor **1140F**, a proximity sensor **1140G**, a color sensor **1140H** (e.g., red, green, blue (RGB) sensor), a biometric sensor **1140I**, a temperature/humidity sensor **1140I**, an illuminance sensor **1140K**, or an UV sensor **1140M**. Even though not illustrated, additionally or alternatively, the sensor module **1140** can further include, for example, an E-nose sensor, an electromyography sensor (EMG) sensor, an electroencephalogram (EEG) sensor, an electrocardiogram (ECG) sensor, a photoplethysmographic (PPG) sensor, an infrared (IR) sensor, an iris sensor, and/or a fingerprint sensor. The sensor module **1140** can further include a control circuit for controlling at least one or more sensors included therein. According to an embodiment of the present disclosure, the electronic device **1101** can further include a processor which is a part of the processor **1110** or independent of the processor **1110** and is configured to control the sensor module **1140**. The processor can control the sensor module **1140** while the processor **910** remains in a sleep state.

The input device **1150** can include, for example, a touch panel **1152**, a (digital) pen sensor **1154**, a key **1156**, or an ultrasonic input unit **1158**. The touch panel **1152** can use at least one of capacitive, resistive, infrared, or ultrasonic detecting methods. Also, the touch panel **1152** can further include a control circuit. The touch panel **1152** can further include a tactile layer to provide a tactile reaction to a user.

The (digital) pen sensor **1154** can be, for example, a part of a touch panel or can include an additional sheet for recognition. The key **1156** can include, for example, a physical button, an optical key, a keypad, and the like. The ultrasonic input device **1158** can detect (or sense) an ultrasonic signal, which is generated from an input device, through a microphone (e.g., a microphone **1188**) and can check data corresponding to the detected ultrasonic signal.

The display **1160** (e.g., the display **1060** of FIG. **10**) can include a panel **1162**, a hologram device **1164**, or a projector **1166**. The panel **1162** can be configured the same as or similar to a display **1060** of FIG. **10**. The panel **1162** can be implemented to be flexible, transparent or wearable, for example. The panel **1162** and the touch panel **1152** can be integrated into a single module. The hologram device **1164**

can display a stereoscopic image in a space using a light interference phenomenon. The projector **1166** can project light onto a screen so as to display an image. The screen can be arranged in the inside or the outside of the electronic device **1101**. According to an embodiment of the present disclosure, the display **1160** can further include a control circuit for controlling the panel **1162**, the hologram device **1164**, or the projector **1166**.

The interface **1170** can include, for example, a high-definition multimedia interface (HDMI) **1172**, a universal serial bus (USB) **1174**, an optical interface **1176**, or a D-subminiature (D-sub) **1178**. The interface **1170** can be included, for example, in the communication interface **1070** illustrated in FIG. **10**. Additionally or alternatively, the interface **1170** can include, for example, a mobile high definition link (MHL) interface, a SD card/multi-media card (MMC) interface, or an infrared data association (IrDA) standard interface.

The audio module **1180** can convert a sound and an electric signal in dual directions. At least a portion of the audio module **1180** can be included, for example, in an input/output interface **1050** illustrated in FIG. **10**. The audio module **1180** can process, for example, sound information that is inputted or outputted through a speaker **1182**, a receiver **1184**, an earphone **1186**, or a microphone **1188**.

The camera module **1191** for shooting a still image or a video can include, for example, at least one image sensor (e.g., a front sensor or a rear sensor), a lens, an image signal processor (ISP), or a flash (e.g., an LED or a xenon lamp).

The power management module **1195** can manage, for example, power of the electronic device **1101**. According to an embodiment of the present disclosure, a power management integrated circuit (PMIC) a charger IC, or a battery or fuel gauge can be included in the power management module **1195**. The PMIC can have a wired charging method and/or a wireless charging method. The wireless charging method can include, for example, a magnetic resonance method, a magnetic induction method or an electromagnetic method and can further include an additional circuit, for example, a coil loop, a resonant circuit, or a rectifier, and the like. The battery gauge can measure, for example, a remaining capacity of the battery **1196** and a voltage, current or temperature thereof while the battery is charged. The battery **1196** can include, for example, a rechargeable battery or a solar battery.

The indicator **1197** can display a specific state of the electronic device **1101** or a portion thereof (e.g., a processor **1110**), such as a booting state, a message state, a charging state, or the like. The motor **1198** can convert an electrical signal into a mechanical vibration and can generate the following effects: vibration, haptic, and the like. Even though not illustrated, a processing device (e.g., a GPU) for supporting a mobile TV can be included in the electronic device **1101**. The processing device for supporting a mobile TV can process media data according to the standards of digital multimedia broadcasting (DMB), digital video broadcasting (DVB), MediaFlo™, or the like.

Each of the above-mentioned elements of the electronic device according to various embodiments of the present disclosure can be configured with one or more components, and the names of the elements can be changed according to the type of the electronic device. The electronic device according to various embodiments of the present disclosure can include at least one of the above-mentioned elements, and some elements can be omitted or other additional elements can be added. Furthermore, some of the elements of the electronic device according to various embodiments

of the present disclosure can be combined with each other so as to form one entity, so that the functions of the elements can be performed in the same manner as before the combination.

According to various embodiments of the present disclosure, an electronic device which is connectable to an auxiliary device can include a display, a memory, a communication module configured to perform local communication, and a processor configured to control the display, the memory, or the communication module and the processor can connect with an external electronic device through local communication based on at least one of first identification information received through the auxiliary device or second identification information stored in the memory.

According to various embodiments of the present disclosure, in the case where the first identification information and the second identification information are different from each other, the processor can connect with the external electronic device through the local communication. The processor can transmit a response request signal, which includes the first identification information, to a surrounding device. The processor can search for a surrounding signal which includes the second identification information. The local communication can be a communication by a way of Wi-Fi Direct.

According to various embodiments of the present disclosure, the auxiliary device can include a contact area which is physically connectable with the electronic device and a circuitry configured to store the first identification information through the contact area. The auxiliary device can include at least one of an input pen, a keyboard device, a battery cover, or a decoration device.

FIG. **12** is a block diagram of a program module according to various embodiments of the present disclosure. According to an embodiment of the present disclosure, a program module **1210** (e.g., the program **1040** of FIG. **10**) can include an operating system (OS) to control resources associated with an electronic device (e.g., the electronic device **1001** of FIG. **10**), and/or diverse applications (e.g., the application program **1047** of FIG. **10**) driven on the OS. The OS can be, for example, Android®, iOS, windows, symbian, tizen, or bada.

The program can include, for example, a kernel **1220**, a middleware **1230**, an application programming interface (API) **1260**, and/or an application **1270**. At least a part of the program module **1210** can be preloaded on an electronic device or can be downloadable from an external electronic device (e.g., the electronic devices **1002** and **1004**, the server **1006**, and the like of FIG. **10**).

The kernel **1220** (e.g., the kernel **1041** of FIG. **10**) can include, for example, a system resource manager **1221** or a device driver **1223**. The system resource manager **1221** can perform control, allocation, or retrieval of system resources. According to an embodiment of the present disclosure, the system resource manager **1221** can include a process managing part, a memory managing part, or a file system managing part. The device driver **1223** can include, for example, a display driver, a camera driver, a Bluetooth driver, a common memory driver, an USB driver, a keypad driver, a Wi-Fi driver, an audio driver, or an inter-process communication (IPC) driver.

The middleware **1230** can provide, for example, a function which the application **1270** needs in common, or can provide diverse functions to the application **1270** through the API **1260** to allow the application **1270** to efficiently use limited system resources of the electronic device. According to an embodiment of the present disclosure, the middleware

1230 (e.g., the middleware **1043** of FIG. **10**) can include at least one of a runtime library **1235**, an application manager **1241**, a window manager **1242**, a multimedia manager **1243**, a resource manager **1244**, a power manager **1245**, a database manager **1246**, a package manager **1247**, a connectivity manager **1248**, a notification manager **1249**, a location manager **1250**, a graphic manager **1251**, or a security manager **1252**.

The runtime library **1235** can include, for example, a library module which is used by a compiler to add a new function through a programming language while the application **1270** is being executed. The runtime library **1235** can perform input/output management, memory management, or capacities about arithmetic functions.

The application manager **1241** can manage, for example, a life cycle of at least one application of the application **1270**. The window manager **1242** can manage a GUI resource which is used in a screen. The multimedia manager **1243** can identify a format necessary for playing diverse media files and can perform encoding or decoding of media files by using a codec suitable for the format. The resource manager **1244** can manage resources such as a storage space, memory, or source code of at least one application of the application **1270**.

The power manager **1245** can operate, for example, with a basic input/output system (BIOS) to manage a battery or power, and can provide power information for an operation of an electronic device. The database manager **1246** can generate, search for, or modify database which is to be used in at least one application of the application **1270**. The package manager **1247** can install or update an application which is distributed in the form of package file.

The connectivity manager **1248** can manage, for example, wireless connection such as Wi-Fi or Bluetooth. The notification manager **1249** can display or notify an event such as arrival message, promise, or proximity notification in a mode that does not disturb a user. The location manager **1250** can manage location information about an electronic device. The graphic manager **1251** can manage a graphic effect that is provided to a user or manage a user interface relevant thereto. The security manager **1252** can provide a general security function necessary for system security or user authentication. According to an embodiment of the present disclosure, in the case where an electronic device (e.g., the electronic device **1001** of FIG. **10**) includes a telephony function, the middleware **1230** can further include a telephony manager for managing a voice or video call function of the electronic device.

The middleware **1230** can include a middleware module that combines diverse functions of the above-described components. The middleware **1230** can provide a module specialized to each OS kind to provide differentiated functions. Additionally, the middleware **1230** can dynamically remove a part of the preexisting components or can add a new component thereto.

The API **1260** (e.g., the API **1045** of FIG. **10**) can be, for example, a set of programming functions and can be provided with a configuration which is variable depending on an OS. For example, in the case where an OS is the android or the iOS, it can be permissible to provide one API set per platform. In the case where an OS is the tizen, it can be permissible to provide two or more API sets per platform.

The application **1270** (e.g., the application program **1047** of FIG. **10**) can include, for example, one or more applications capable of providing functions for a home **1271**, a dialer **1272**, an SMS/MMS **1273**, an instant message (IM) **1274**, a browser **1275**, a camera **1276**, an alarm **1277**, a

contact **1278**, a voice dial **1279**, an e-mail **1280**, a calendar **1281**, a media player **1282**, an album **1283**, and a timepiece **1284**, or for offering health care (e.g., measuring an exercise quantity or blood sugar) or environment information (e.g., atmospheric pressure, humidity, or temperature).

According to an embodiment, the application **1270** can include an application (hereinafter referred to as "information exchanging application" for descriptive convenience) to support information exchange between the electronic device (e.g., the electronic device **1001** of FIG. **10**) and an external electronic device (e.g., the electronic device **1002** or **1004** of FIG. **10**). The information exchanging application can include, for example, a notification relay application for transmitting specific information to the external electronic device, or a device management application for managing the external electronic device.

For example, the notification relay application can include a function of transmitting notification information, which arise from other applications (e.g., applications for SMS/MMS, e-mail, health care, or environmental information), to an external electronic device (e.g., the electronic device **1002** or **1004** of FIG. **10**). Additionally, the notification relay application can receive, for example, notification information from an external electronic device and provide the notification information to a user.

The device management application can manage (e.g., install, delete, or update), for example, at least one function (e.g., turn-on/turn-off of an external electronic device itself (or a part of components) or adjustment of brightness (or resolution) of a display) of the external electronic device (e.g., the electronic device **1002** or **1004** of FIG. **10**) which communicates with the electronic device, an application running in the external electronic device, or a service (e.g., a call service, a message service, or the like) provided from the external electronic device.

According to an embodiment of the present disclosure, the application **1270** can include an application (e.g., a health care application of a mobile medical device, and the like) which is assigned in accordance with an attribute of the external electronic device (e.g., the electronic device **1002** or **1004** of FIG. **10**). According to an embodiment of the present disclosure, the application **1270** can include an application which is received from an external electronic device (e.g., the server **1006** or the electronic device **1002** or **1004** of FIG. **10**). According to an embodiment of the present disclosure, the application **1270** can include a pre-loaded application or a third party application which is downloadable from a server. The component titles of the program module **1210** according to the embodiment of the present disclosure can be modifiable depending on kinds of OSs.

According to various embodiments of the present disclosure, at least a portion of the program module **1210** can be implemented by software, firmware, hardware, or a combination of two or more thereof. At least a portion of the program module **1210** can be implemented (e.g., executed), for example, by a processor (e.g., the processor **1020** of FIG. **10**). At least a portion of the program module **1210** can include, for example, modules, programs, routines, sets of instructions, or processes, or the like for performing one or more functions.

The term "module" used herein can represent, for example, a unit including one or more combinations of hardware, software and firmware. The term "module" can be interchangeably used with the terms "unit", "logic", "logical block", "component" and "circuit". The "module" can be a minimum unit of an integrated component or can be a part

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thereof. The “module” can be a minimum unit for performing one or more functions or a part thereof. The “module” can be implemented mechanically or electronically. For example, the “module” can include at least one of an application-specific IC (ASIC) chip, a field-programmable gate array (FPGA), and a programmable-logic device for performing some operations, which are known or will be developed.

At least a portion of an apparatus (e.g., modules or functions thereof) or a method (e.g., operations) according to various embodiments of the present disclosure can be, for example, implemented by instructions stored in a computer-readable storage media in the form of a program module. The instruction, when executed by a processor (e.g., the processor 1020 of FIG. 10), can cause the one or more processors to perform a function corresponding to the instruction. The computer-readable storage media, for example, can be the memory 1030 of FIG. 10.

A computer-readable recording medium can include a hard disk, a magnetic media, a floppy disk, a magnetic media (e.g., a magnetic tape), an optical media (e.g., a compact disc read only memory (CD-ROM) and a digital versatile disc (DVD), a magneto-optical media (e.g., a floptical disk), and hardware devices (e.g., a read only memory (ROM), a random access memory (RAM), or a flash memory). Also, a program instruction can include not only a mechanical code such as things generated by a compiler but also a high-level language code executable on a computer using an interpreter. The above hardware unit can be configured to operate via one or more software modules for performing an operation of the present disclosure, and vice versa.

According to various embodiments of the present disclosure, the computer-readable storage media may store program to perform the following: receiving first identification information through an auxiliary device which is connectable to an electronic device, comparing the received first identification information with second identification information stored in the electronic device, and in the case where the first and second identification information are different from each other, connecting with an external device through local communication based on at least one of the first or second identification information in the case where the first and second identification information are different from each other.

The communication method according to various embodiments of the present disclosure may be simply connected to the local wireless communication so as to perform functions, such as data transmission, screen mirroring, and the like, by exchanging auxiliary devices (e.g., touch pens) which is connectable to the electronic device.

The communication method according to various embodiments of the present disclosure may simply end the local wireless communication by releasing the auxiliary device which is connected to the electronic device.

Although the present disclosure has been described with an exemplary embodiment, various changes and modifications may be suggested to one skilled in the art. It is intended that the present disclosure encompass such changes and modifications as fall within the scope of the appended claims.

What is claimed is:

1. A communication method performed at an electronic device, the method comprising:
receiving first identification information through an auxiliary device that is connectable with the electronic device, if the auxiliary device is connected to the

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electronic device, wherein the auxiliary devices is one of: an input device, a cover, a case, or a decoration device;

comparing the received first identification information to second identification information stored in the electronic device; and

connecting with an external electronic device through local communication based on at least one of the first identification information or the second identification information, if the first identification information and the second identification information are different from each other.

2. The method of claim 1, wherein the connecting through the local communication comprises:

transmitting a response request signal including the first identification information.

3. The method of claim 1, wherein the connecting through the local communication comprises:

searching for a surrounding signal including the second identification information.

4. The method of claim 1, wherein the connecting through the local communication comprises:

connecting through the local communication based on state information about the electronic device.

5. The method of claim 1, wherein the receiving of the first identification information comprises:

connecting physically with the electronic device through a contact area included in the auxiliary device.

6. The method of claim 5, wherein the receiving of the first identification information comprises:
receiving the first identification information through the contact area.

7. The method of claim 1, further comprising:
providing a user interface (UI) for the local communication through a display.

8. The method of claim 1, further comprising:
ending the local communication if a connection between the auxiliary device and the electronic device is released.

9. The method of claim 1, further comprising: ending the local communication if the electronic device and an auxiliary device which is related with the electronic device in advance are connected with each other.

10. A communication method performed between first and second electronic devices, the method comprising:

receiving first identification information from an auxiliary device that is connectable with the first electronic device, at the first electronic device, if the auxiliary device is connected to the first electronic device, wherein the auxiliary devices is one of: an input device, a cover, a case or a decoration device;

comparing the received first identification information to second identification information, which is stored in the first electronic device, at the first electronic device; and connecting with the second electronic device through local communication based on at least one of the first or second identification information at the first electronic device, if the first and second identification information are different from each other.

11. The method of claim 10, wherein the connecting through the local communication comprises:

transmitting a response request signal including the first identification information, to the second electronic device at the first electronic device.

12. The method of claim 10, wherein the connecting through the local communication comprises:

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searching for a response request signal including the second identification information, transmitted from the second electronic device at the first electronic device.

13. An electronic device that is connectable to an auxiliary device, the electronic device comprises:

- a display;
- a memory;
- a communication module configured to perform local communication; and
- a processor configured to:
 - control the display, the memory, or the communication module; and

if the auxiliary device is connected to the electronic device, connect with an external electronic device through local communication based on at least one of first identification information received through the auxiliary device or second identification information stored in the memory, wherein the auxiliary device comprises at least one of an input pen, a keyboard device, a battery cover, or a decoration device.

14. The electronic device of claim 13, wherein if the first identification information and the second identification information are different from each other, the processor is

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configured to connect with the external electronic device through the local communication.

15. The electronic device of claim 13, wherein the processor is configured to transmit a response request signal, which includes the first identification information, to a surrounding device.

16. The electronic device of claim 13, wherein the processor is configured to search for a surrounding signal which includes the second identification information.

17. The electronic device of claim 13, wherein the auxiliary device comprises:

- a contact area that is physically connectable with the electronic device; and
- a circuitry configured to store the first identification information through the contact area.

18. The electronic device of claim 13, wherein the processor is configured to communicate, via the communication module, with a second electronic device in response to connecting a second auxiliary device to the electronic device and connecting the auxiliary device to the second electronic device.

19. The electronic device of claim 13, wherein the local communication is a communication by way of Wi-Fi Direct.

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